

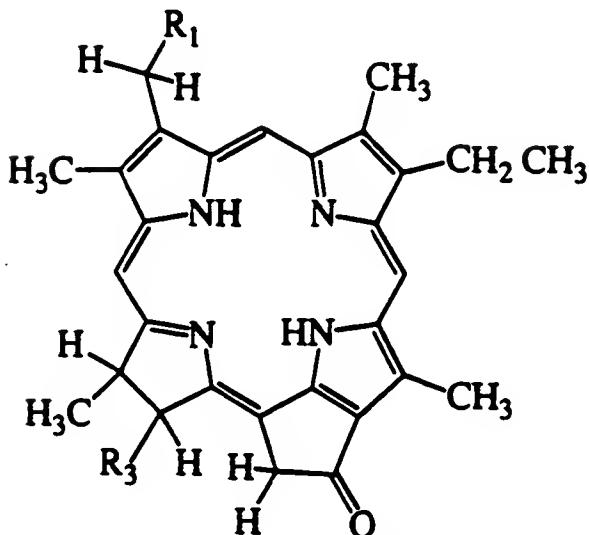
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CLAIMS

1. A compound of formula I:

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I



wherein R<sub>1</sub> is CH<sub>2</sub>OR<sub>2</sub> where R<sub>2</sub> is a primary or secondary  
alkyl containing 1 to 20 carbons; and R<sub>3</sub> is -CO<sub>2</sub>R<sub>4</sub> where  
20 R<sub>4</sub> is H or an alkyl containing 1 to 20 carbons.

2. The compound as claimed in claim 1,  
wherein R<sub>1</sub> is CH<sub>2</sub>-O-hexyl.

25 3. The compound as claimed in claim 1,  
wherein R<sub>2</sub> is -CH<sub>3</sub>.

4. The compound as claimed in claim 1,  
wherein R<sub>3</sub> is -CO<sub>2</sub>CH<sub>3</sub>.  
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5. A method to effect the destruction of target virus, cells or tissue, comprising:

contacting said target with an effective amount of compound of claim 1; and irradiating with light absorbed by said compound.

6. A pharmaceutical composition useful in treatment of a target virus, cells or tissue, comprising: an effective amount of the compound of claim 1 in admixture with a pharmaceutically acceptable excipient.

7. A conjugate which consists essentially of the compound of claim 1 covalently bound to a target-specific component.

8. The conjugate of claim 7 wherein the component is an immunoglobulin or a receptor liquid.

9. A pharmaceutical composition useful for labeling malignant tissue which comprises the compound of claim 1 associated with a label.

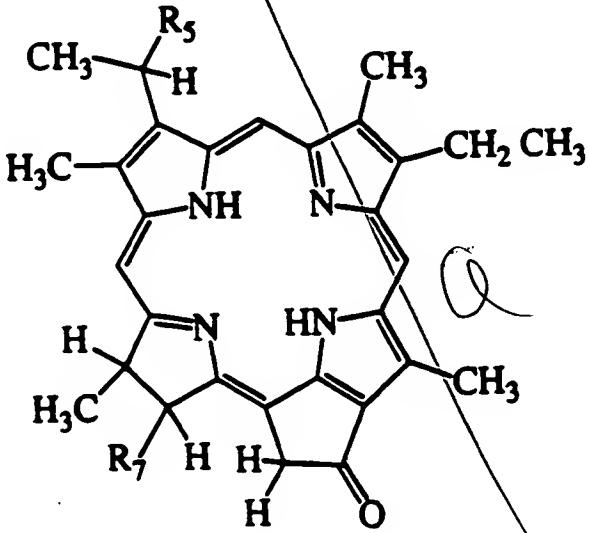
10. A compound of formula II:

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II



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wherein R<sub>5</sub> is -OR<sub>6</sub> where R<sub>6</sub> is a primary or secondary alkyl containing 1 to 20 carbons and R<sub>7</sub> is -CO<sub>2</sub>R<sub>8</sub> where R<sub>8</sub> is H or an alkyl containing 1 to 20 carbons.

5           11. The compound as claimed in claim 10,  
wherein R<sub>5</sub> is -O-hexyl.

10           12. The compound as claimed in claim 10,  
wherein R<sub>7</sub> is -CO<sub>2</sub>CH<sub>3</sub>.

13. The compound as claimed in claim 10,  
wherein R<sub>5</sub> is -O-(CH<sub>2</sub>)<sub>5</sub>CH<sub>3</sub> and R<sub>7</sub> is selected from the group consisting of -CO<sub>2</sub>CH<sub>3</sub> and -CO<sub>2</sub>H.

15           14. A method to effect the destruction of target virus, cells or tissue, comprising:  
               contacting said target with an effective amount of compound of claim 10; and irradiating with light absorbed by said compound.

20           15. A pharmaceutical composition useful in treatment of a target virus, cells or tissue, comprising:  
               an effective amount of the compound of claim 10 in admixture with a pharmaceutically acceptable excipient.

25           16. A conjugate which consists essentially of the compound of claim 10 covalently bound to a target-specific component.

30           17. The conjugate of claim 16 wherein the component is an immunoglobulin or a receptor liquid.

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18. A pharmaceutical composition useful for labeling malignant tissue which comprises the compound of claim 10 associated with a label.

5           19. A method of treating a human with abnormal cells which replicate at an abnormally high rate, comprising the steps of:

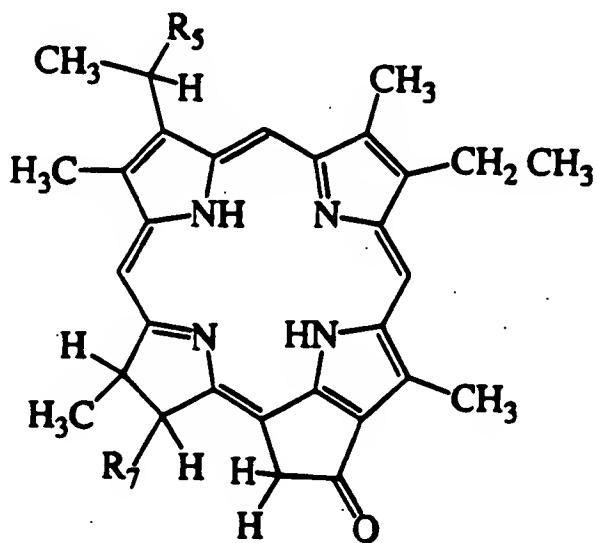
10           administering to the human a therapeutically effective amount of a compound of formula II

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II

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25           wherein R<sub>5</sub> is OR<sub>6</sub> where R<sub>6</sub> is a primary or secondary alkyl containing 5 to 20 carbons and R<sub>7</sub> is -CO<sub>2</sub>R<sub>8</sub> where R<sub>8</sub> is H or -CH<sub>3</sub>;

30           allowing the compound of formula I to accumulate on the abnormal cells; and

35           irradiating the compound of formula I with a wavelength of light which is absorbed by the compound of formula I and thereby generating a cytotoxic effect with respect to the abnormal cells.

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20. The method as claimed in claim 19 wherein the compound is administered in an amount in the range of 0.01 mg/kg to 1.0 mg/kg of body weight.

5 21. The method as claimed in claim 20 wherein the compound of formula II is administered at timed intervals in the range of from every 3 hours to every 72 hours for over a period of from 1 day to 30 days.

10 22. The method as claimed in claim 21, wherein R<sub>5</sub> is -O-hexyl and R<sub>7</sub> is -CO<sub>2</sub>H.

15 23. The method as claimed in claim 22 wherein the wavelength of the light is in the range of 600 to 700 nm.

24. The method as claimed in claim 23 wherein the wavelength of the light is about 660 nm.

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PYROPHEOPHORBIDES AND THEIR  
USE IN PHOTODYNAMIC THERAPY

*SUB B1*

Pyropheophorbide compounds are injected into a host and accumulate in tumor tissue to a higher degree than surrounding normal tissues. When the pyropheophorbide compounds are exposed to a particular wavelength of light the compounds become cytotoxic and destroy the tumor or diseased tissue without causing irreversible normal tissue damage. The pyropheophorbide compounds have shown improved results as compared to drugs currently used in photodynamic therapy. Further, they absorb light further in the red, optimizing tissue penetration and are retained in the skin for short time periods relative to other drugs used in photodynamic therapy.

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